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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,343	07/20/2006	**Tadahiro Ohmi**	SUG10166	9535

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
3753	

MAIL DATE	DELIVERY MODE
09/15/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,343	OHMI ET AL.	
	Examiner	Art Unit	
	WILLIAM MCCALISTER	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 10-19* is/are pending in the application.

4a) Of the above claim(s) *4-7,13 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 10-12 and 15-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/12/2009 has been entered.

Claims 8 and 9 are cancelled. Claims 4-7, 13 and 14 are withdrawn from consideration. Claims 1-3, 10-12 and 15-19 are pending for immediate consideration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3, 10-12, and 15-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "moving a valve body by increasing [ ] a driving input" (step b) and "further increasing [ ] the driving input" to fully open the valve (step d), the specification does not reasonably provide enablement for *increasing*

the input to partially open the valve, and then *decreasing* the input to fully open the valve. Similarly, the specification does not enable one to *decrease* the input to partially open the valve, and then *increase* the input to fully open the valve. (See steps (d) of the independent claims.) The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. That is, increasing the driving input will serve only to further movement of the valve in the same direction. (The word “further" is ambiguous in context, and does not necessarily imply that "increasing or decreasing" furthers a preceding increase or decrease, respectively. For instance, the word "further" could be read as pertaining to the order of the steps.)

Further according to claims 18 and 19, “when a first step actuator operating pressure rises, … the initial step operating pressure is lowered”. The specification provides inadequate guidance that would allow one to perform this step and achieve the desired results with both a biased-open and a biased-closed valve. That is, whether the initial step operating pressure is raised or lowered at this step would be determined by whether valve opening is achieved by raising or lowering the actuator operating pressure. It is recommended that Applicant include separate claims directed to each embodiment.

Also, claims 18 and 19 require “second control signal Sc data [to be] outputted from the electropneumatic conversion device to control movement of the valve body..." The specification provides inadequate guidance for enabling one of skill to perform this method without undue experimentation, as set forth immediately below.

4. Claims 10-12 and 15-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 18 and 19 require "second control signal Sc data [to be] outputted from the electropneumatic conversion device." The specification describes Sc to be a signal sent from the tuning box (19) into the electropneumatic converter (20). As seen in FIG 11, the only output of the electropneumatic converter is pressure signal Pa.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 at step (b) requires moving a valve "toward a direction". Motion is understood to occur *in* a direction, or toward a *position*.

7. Claims 10-12 and 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Claim 1 at step (b) requires moving a valve "toward a direction". Motion occurs *in* a direction, or towards a *position*.

a. Regarding claim 18:

i. Lines 27-29 refer to "a first step actuator operating pressure Pa" and "a second step actuator operating pressure Pa". Are these actually two separate iterations of Pa (Pa_1 and Pa_2)?

ii. Does each 2-step actuator operating pressure (first and second) comprise an intermediate step operating pressure (Ps') and a "final" actuator operating pressure (Pa), as shown at FIG 15?

iii. Lines 34-35 refer to "intermediate step operating pressure Ps' ". Is this Ps' distinct from the first and second intermediate step operating pressures Ps'?

iv. Lines 35-36 refer to "second control signal Sc". Is this the same as "first control signal Sc"? Should they be referred to as Sc_1 and Sc_2?

b. Regarding claim19:

i. Reference is made to "the first 2-step actuator operating pressure Pa" (line 25), "a first step actuator operating pressure Pa" (line 28), and "a second step actuator operating pressure Pa" (line 29). Are these all the same variable (Pa)?

ii. Does each 2-step actuator operating pressure (first and second) comprise an intermediate step operating pressure (Ps') and a "final" actuator operating pressure (Pa), as shown at FIG 15?

iii. Lines 33-35 refer to "intermediate step operating pressure Ps' ". Is this Ps' distinct from the first and second intermediate step operating pressures Ps'?

iv. Lines 35-36 refer to "second control signal Sc". Is this the same as "first control signal Sc"? Should they be referred to as Sc_1 and Sc_2?

8. Amending steps (g) of claims 18 and 19 to include delineated sub-steps would help to improve the claims' clarity. Applicant is encouraged to cite specific support in the application as originally filed for all amendments.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 2 and 3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 20, 26 and 27, respectively, of copending Application No. 11/762,987 in view of Burns (US 5,970,430).

The cited claims of the co-pending application, as most recently amended, claim a process of moving a valve body in a closing direction using a two-step actuating pressure in order to avoid water hammer, rather than a two-step valve *opening* process. Burns teaches that it was known to use such a stepped process in both closing and opening directions (see col. 28 lines 9-24). To diagnose the opening of a valve using the claimed two-step procedure, it would have been obvious to perform the claimed process in an opening direction, as taught by Burns.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 102

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claim 1 as understood is rejected under 35 U.S.C. 102(b) as being anticipated by Burns.

Burns discloses a method comprising the steps of:

(a) providing a fluid passage (inherently, connected to valve 109) openable by operation of an actuator operating type valve (109) provided on the fluid passage of a pipe passage, wherein the fluid passage has a nearly constant pressure (i.e., constant or non-constant) inside the pipe passage (when the valve is closed, for example);

(b) moving a valve body (inherent to every valve) of the actuator operating type valve from a state of full closing toward a direction of valve opening to a first degree of valve opening by increasing or decreasing driving input to an actuator of the actuator operating type valve (see col. 28 lines 9-23, specifically lines 10-12 and the “ten step" process), wherein the driving input is increased or reduced to a first prescribed set value (that which corresponds to the step size) in order to prevent a water hammer in the fluid passage (intended result of the step does not further define the step; moreover this result is achieved because of Burns’ stepped opening process, where the first prescribed set value results in the step-wise movement);

(c) holding the driving input to the actuator at the first set value for a first period of time (the time between steps); and then

(d) further increasing or decreasing the driving input to move the valve body from the first degree of valve opening to a state of full valve opening (see col. 28 lines 9-12) so the fluid passage is opened without causing a water hammer (it inherently avoids water hammer of a degree that would occur in a non-stepped opening procedure).

Claim Rejections - 35 USC § 103

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. Claims 2 and 3 as understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns.

Regarding claim 2, Burns discloses a valve body (inherent) which is a component of a pneumatically-operated diaphragm valve, and further contemplates his diagnostic method to be performed with valves comprising other structural features which are known in the art (col. 18 lines 1-5, col. 29 lines 28-45), but does not disclose a normally closed, constant volume diaphragm valve. However, normally closed, constant volume diaphragm valves and actuators were well-known in the art at the time of invention (see JP 11-118049, for instance). It would have been obvious to perform Burns' method on such a valve and actuator in order to diagnose the operation thereof.

Regarding claim 3, Burns discloses a pressure rise value of the fluid passage to be made to be within 10% of a first steady-state pressure value before the valve is made to open (which is proportional to the step size of, for example 1%, see col. 28 line 11). Burns also discloses the first period of time to be dependent on the size and response time of the valve and actuator (col. 30, lines 11-15), and that the method can be performed on many sizes and types of valves and actuators (col. 29, lines 28-45), but does not disclose the first period of time to be less than 1 second. It would have been

obvious to one of ordinary skill in the art at the time of invention to perform Burns' method on a valve and actuator having a short response time, such that the first period of time is less than 1 second, in order to diagnose the operational characteristics of such a valve and actuator

Allowable Subject Matter

15. Claims 10-12 and 15-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. §112 2nd ¶, set forth above.

Response to Arguments

16. Applicant's arguments filed 8/12/2009 have been fully considered but they are not persuasive.

a. Applicant argues that the double patenting rejection should be withdrawn because it is not ripe. In response, MPEP 804 explains:

> Occasionally, the examiner becomes aware of two copending applications that were filed by the same inventive entity ... that would raise an issue of double patenting if one of the applications became a patent. Where this issue can be addressed without violating the confidential status of applications (35 U.S.C. 122), the courts have sanctioned the practice of making applicant aware of the potential double patenting problem if one of the applications became a patent by permitting the examiner to make a "provisional" rejection on the ground of double patenting. *In re Mott,* 539 F.2d 1291, 190 USPQ 536 (CCPA 1976); *In re Wetterau,* 356 F.2d 556, 148 USPQ 499 (CCPA 1966). The merits of such a provisional rejection can be addressed by both the applicant and the examiner without waiting for the first patent to issue. The "provisional" double patenting rejection should

> continue to be made by the examiner in each application as long as there are conflicting claims in more than one application unless that "provisional" double patenting rejection is the only rejection remaining in at least one of the applications.

b. Applicant contends that Burns does not teach closing the valve without causing water hammer, since water hammer is not a term of degree as the Examiner contends (Remarks, pp. 17-21). Applicant points to an advertisement by a supplier of valves (at http://www.omega.com/techref/ waterhammer.html) which states that water hammer may damage pressure sensors and requires extensive effort to prevent. Applicant reasons that because Burns does not explicitly discuss “water hammer”, Burns’ device does not avoid water hammer. In response, the language found at omega.com is seen as puffing. Product suppliers have every incentive to cast their products in the best possible light, including the creation and exaggeration of problems which their products solve (Omega’s “snubbers” prevent “destructive water hammer”). Moreover, even if the interpretation found at Omega.com were seen as accurate, it likely would not constitute the broadest reasonable interpretation of the term "water hammer". Generally, “water hammer” is “the concussion and accompanying noise that result when a volume of water moving in a pipe suddenly stops or loses momentum” (Dictionary.com). As such, “water hammer” is a term of degree, since these physical effects (noise) will occur to a greater or lesser extent if fluid flow of a greater or lesser extent is *suddenly* stopped to a greater or lesser extent. Because Burns’ valve closure occurs in a step-wise fashion (see col. 28

lines 9-23, specifically lines 10-12, describing method step 304), the flow rate through his valve is decreased before complete valve closure. Also, this stepwise closure lessens the extent to which the entire flow path is "suddenly" closed. (These are the same operational characteristics which Applicant's valve exploits to reduce water hammer.) As such, Burns' method "avoids water hammer" of a degree that would have occurred if the flow rate had not been decreased before complete valve opening, or if the entire process of valve opening were performed suddenly, rather than in a stepwise fashion. The fact that Applicant has recognized another advantage which would flow naturally from the prior art cannot be the basis for patentability. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

c. Applicant argues that Burns does not teach or suggest opening a valve in only two movement increments (Remarks, p. 22). In response, this feature is not claimed. The claim requires moving the valve body from a fully closed state to a partially opened state, and then from the partially opened state to the fully opened state. Under the broadest reasonable interpretation, something can be moved from one state to another by transitioning through multiple sub-states.

d. Applicant argues that there is no reasonable expectation of success in modifying Burn's method (Remarks, p. 16). In response, the expectation of success derives from Burns explicit disclosure that his method can be performed

on many types of valves and actuators (col. 29, lines 21-44). (The rejection does not rely on converting a 5-step method into a 2-step method, as suggested by Applicant. The only modification involves applying Burn's technique to a valve and actuator of a different size and type.)

e. Applicant also argues that the Examiner has failed to establish a prima facie case of obviousness because there has been set forth no legitimate reason to modify Burns. The Examiner maintains Burns' disclosed purpose of testing the operation of a valve and actuator is a legitimate reason to perform Burns' test on a valve and actuator of any given size and type.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM MCCALISTER whose telephone number is (571)270-1869. The examiner can normally be reached on Monday through Friday, 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM MCCALISTER/
Examiner, Art Unit 3753

/STEPHEN HEPPERLE/
Primary Examiner, Art Unit 3753

WM
9/1/2009